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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/694,888
Filing Date: October 29, 2003
Appellant(s): BERRYMAN, WALTER HENRY

Paul Lewis
For Appellant

EXAMINER'S ANSWER

1. This is in response to the appeal brief filed September 18, 2007 appealing from the Office action mailed September 25, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2,959,503	LINDSON	11-1960
6,551,720	SREERAM ET AL.	4-2003
DE 3838598A	ZIMMERMANN ET AL.	5-1990

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 1,2,4 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 383598 A1.

DE 383598 A1 teaches a method for producing electronic circuits for thick-films in sensors in conjunction with a strain-gauge built onto the substrate. At least one glass-ceramic insulation layer is applied onto a metallic substrate, dried and heated in a neutral atmosphere that includes CO_2. A second layer of glass-ceramic insulating layer is applied and fired in an oxidizing atmosphere, i.e. air, and fitted with conducting tracks and or electronic components including strain-gauges. The substrate is a titanium-alloy or respectively titanium (pg. 2, machine translation filed 12/1/05)

DE 383598 A1 fails to positively recite "controlling bending" by controlling processing parameters of thickness and coefficient of expansion.

While the Examiner acknowledges the fact that the DE 383598 A1 fails to specifically recite controlling these parameters, DE 383598 A1 does chose the processing parameters to achieve the desired result which is all that is necessary to meet the claimed limitations are recited. DE 383598 A1 depicts in the drawings a final product that does not suffer from distortion/bending or warping. Furthermore, the specification does not recite or even hint at this phenomenum even occurring.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over DE 383598 A1 in combination with Sreeram et al. (6,551,720).

Features described above concerning DE 383598 A1 are incorporated here.

DE 383598 A1 fails to recite the glass-ceramic composition to include lead.

Sreeram et al. (6,551,720) teaches a titanium substrate being coated with a lead-based glaze and then a glassy-dielectric layer which can include lead prior to applying conductive ink thereto. The lead glaze reduces oxidation of the titanium and allows good mechanical locking of the titanium to the glass ceramic composition in the firing process (col. 11, lines 20-35).

With respect to the lead diffusing into the titanium surface, it is the Examiner's position that this would inherently take place as the instant invention and the combination of prior art utilize the same or similar materials. Appellant has been requested to supply a showing of how the instant invention achieves this feature while the prior art would not even thought the materials are the same, however, no such showing has been provided to refute the Examiner's position.

Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 383598 A1 in combination with Lindson (2,959,503).

Features described above concerning DE 383598 A1 are incorporated here.

DE 383598 A1 fails to recite protecting the reverse side of the titanium substrate with a glass-ceramic composition to prevent oxidation of the titanium.

Lindson (2,959,503) teaches coating a titanium or titanium alloy substrate with a glass frit to protect it from oxidation during subsequent processing including heat treatments (col. 2, lines 10-30).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified DE 383598 A1 process by incorporating a protective glass coating on the reverse side of the titanium substrate as evidenced Lindson (2,959,503) because of the advantages associated therewith, i.e. preventing oxidation of the underside of the titanium substrate.

(10) Response to Argument

Appellant argued that the prior art fails to teach controlling the parameters of young's modulus and temperature coefficient concerning the thickness and composition of the applied glassy dielectric layer to prevent bending.

The Examiner agrees in part. This has been addressed above. Furthermore, it is well known in the art that the young's modulus is defined as the measure of stiffness of a given material, i.e. elasticity of the material in response to heating or loading and that the thermal coefficient is defined as the energy that is stored in a material during heat transfer, i.e. expanding during heating and shrinking during cooling. One skilled in the art would recognize that these parameters would need to be "optimized", i.e. matched to prevent bending or warping of a coating on a substrate. If this were not the case, then bending/warping or even peeling would result in a non-effective coating layer. Regarding the DE 383598 A1 reference, DE 383598 A1 teaches forming electronic circuits on a substrate and it is the Examiner's position that one skilled in the art would recognize to control the young's modulus and thermal expansion

coefficients to prevent bending/warping of the coating and substrate as they would be "bound" to one another with the heat treating step and any significant mismatch in these parameters would lead to an imperfect coating as the two materials would produce stress/strain amongst one another causing bending/warping.

Appellant argued that the DE 383598 A1 reference teaches a intermediate glass-ceramic layer (which is heated in a neutral atmosphere) between the glass-ceramic layer that is oxidized and the titanium substrate.

The claims are not commensurate in scope with this argument. The claims recites "applying a glass dielectric layer upon at least one surface of said substrate ...". This is not limited to the glass-ceramic layer being "directly" attached to the substrate. The second glass ceramic layer would still meet the claimed limitation of "upon said substrate". Furthermore, the instant invention deals with multiple layers whereby the only layer that would be "attached to the substrate" would be the first layer. In addition, the firing step of the glass-ceramic layer in an oxidizing atmosphere would be met by the DE 383598 A1 reference as the substrate would include the titanium and the first glass-ceramic layer. Hence, the second glass-ceramic layer would meet the limitation as claimed of firing in an oxidizing atmosphere. The substarte is not limited to not having a coating thereon, i.e. a glass-ceramic layer.

Appellant argued that there was no motivation to combine the secondary references with the primary reference.

The Examiner disagrees. As noted above, Sreeram et al. (6,551,720) provides motivation as the lead glaze reduces oxidation of the titanium and allows good mechanical locking of the titanium to the glass ceramic composition in the firing process (col. 11, lines 20-35). Lindson (2,959,503) provides motivation as teaching coating a titanium or titanium alloy substrate with a glass frit to protect it from oxidation during subsequent processing including heat treatments (col. 2, lines 10-30) which is the case here.

Furthermore, in response to Appellant's argument that there is no suggestion to combine the references, the Examiner recognizes that references cannot be arbitrarily combined and that there must be some logical reason why one skilled in the art would be motivated to make the proposed combination of references. *In Re Regel* 188 USPQ 136 (CCPA 1975). However, there is no requirement that the motivation to make the combination be expressly articulated in one or more of the references; the teaching, suggestion or inference can be found not only in the references but also from knowledge generally available to one of ordinary skill in the art. *Ashland Oil v. Delta Resins* 227 USPQ 657 (CAFC 1985). The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In Re McLaughlin* 170 USPQ 209 (CCPA 1971); *In Re Rosselet* 146 USPQ 183 (CCPA 1969). References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. *In Re Simon*, 174 USPQ 114 (CCPA 1972); *In Re Richman* 165 USPQ 509, 514 (CCPA 1970).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/B K Talbot/

Brian K. Talbot

Conferees:

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